

IV.—This was an intensification of the rather permanent high area in the Plateau Region, and had no motion.

V.—First noted p. m. of 10th on the north Pacific Coast. This was the only high that originated so far west. Its motion was southeast, and it was last noted in the central Mississippi Valley, p. m. of 12th.

VI.—First noted to the north of Montana a. m. of 13th. Its motion was east at first, then southeast, and finally northeast, disappearing in the Gulf of St. Lawrence p. m. of 20th.

VII.—First noted to the north of Montana p. m. of 16th. Its motion was generally southeast, and it disappeared in the Ohio Valley p. m. of 19th.

VIII.—First noted in Manitoba a. m. of 20th. Its motion was along the northern border of the country, and it disappeared over Newfoundland a. m. of 26th.

IX.—First noted a. m. of 21st to the north of Montana. Its motion was beyond the region of observation, and was last noted in Manitoba a. m. of 24th.

X.—First noted p. m. of 23d to the north of Montana. Its motion was southeast and east, and it disappeared off the middle Atlantic coast a. m. of 30th.

XI.—First noted to the north of Montana a. m. of 28th. Its motion was eastward, and it was last noted in Maine p. m. of 31st.

*Movements of centers of areas of high and low pressure.*

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
<b>High areas.</b>							<i>Miles.</i>	<i>Days.</i>	<i>Miles.</i>	<i>Miles.</i>
I.....	1, a. m.	29	88	3, a. m.	28	82	800	2.0	399	16.6
II.....	1, a. m.	50	115	10, p. m.	50	68	3,280	9.5	345	14.4
III.....	3, p. m.	39	97	6, a. m.	31	84	1,380	2.5	552	23.0
IV.....										
V.....	10, p. m.	49	124	12, p. m.	39	91	1,860	2.0	930	38.8
VI.....	13, a. m.	52	113	20, p. m.	50	64	3,290	7.5	440	18.3
VII.....	16, p. m.	52	115	19, p. m.	39	86	2,180	3.0	736	30.2
VIII.....	20, a. m.	53	103	26, a. m.	52	63	2,740	6.0	456	19.0
IX.....	21, a. m.	53	116	24, a. m.	54	100	960	3.0	327	13.6
X.....	23, p. m.	55	118	30, a. m.	36	79	2,980	6.5	458	19.1
XI.....	28, a. m.	52	119	31, p. m.	48	69	2,400	3.5	684	28.5
Sums.....							21,880	45.5	5,317	.....
Mean of 10 paths.....									532	22.2
Mean of 45.5 days.....									481	20.0
<b>Low areas.</b>										
I.....	1, a. m.	50	100	3, p. m.	46	57	2,050	2.5	818	34.1
II.....	4, a. m.	48	128	10, a. m.	27	79	3,680	6.0	613	25.5
III.....	6, a. m.	53	118	10, a. m.	41	71	2,420	3.5	692	28.8
IV.....	8, p. m.	53	116	14, p. m.	46	58	3,500	5.5	636	26.5
V.....	14, p. m.	42	126	20, p. m.	49	81	2,770	6.0	462	19.3
VI.....	15, a. m.	27	96	18, a. m.	38	71	1,650	3.0	550	22.9
VII.....	17, a. m.	42	107	19, p. m.	36	73	2,010	2.5	804	33.5
VIII.....	19, p. m.	50	128	20, p. m.	51	111	†	†	†	†
IX.....	20, p. m.	81	99	25, p. m.	48	77	1,540	5.0	308	12.8
X.....	24, p. m.	44	126	28, p. m.	48	90	2,210	4.0	552	23.0
Sums.....							21,830	38.0	5,435	.....
Mean of 9 paths.....									604	25.7
Mean of 38 days.....									574	23.9

\* Stationary in middle Plateau for 5 days.

† Too short path.

**LOW AREAS.**

I.—First noted a. m. of 1st in Manitoba. Its motion was eastward along the north border of United States, and disappeared over Newfoundland p. m. of 3d.

II.—First noted off the north Pacific Coast a. m. of 4th. Its motion was east and southeast, and it disappeared off the Florida coast a. m. of 10th.

III.—First noted to the north of Montana p. m. of 6th. Its motion was eastward, and it disappeared off the Massachusetts coast a. m. of 10th.

IV.—First noted to the north of Montana p. m. of 8th. Its motion was eastward, and it disappeared over Newfoundland p. m. of 14th.

V.—For twenty-four hours on 14th a disturbance had been noted off the north Pacific Coast, but its definite progress upon the land began p. m. of 14th. Its motion was very slow for several days, and then more rapid to the eastward. It was last noted to the north of Lake Erie p. m. of 20th.

VI.—This storm began in the west Gulf a. m. of 15th. Its motion eastward brought it to the Florida coast p. m. of 16th; thence it moved along the Atlantic Coast, and it disappeared off the middle Atlantic Coast a. m. of 18th.

VII.—First noted in Colorado a. m. of 17th. Its motion was rapid toward the east, and it was last noted off the middle Atlantic Coast p. m. of 19th.

VIII.—First noted off the north Pacific Coast p. m. of 19th. It had a slight eastward motion for twenty-four hours, but rapidly filled up to the north of Montana.

IX.—First noted p. m. of 20th in south Texas. Its motion was northeast, and was last noted in the St. Lawrence Valley p. m. of 25th. More general rain or snow accompanied this storm than any other of the month.

X.—First noted p. m. of 24th off the north Pacific Coast. Its motion was eastward, and it was last noted over Lake Superior p. m. of 28th.

**TEMPERATURE OF THE AIR.**

[In degrees Fahrenheit.]

The mean temperature is given for each station in Table II, for voluntary observers. Both the mean temperatures and the departures from the normal are given in Table I for the regular stations of the Weather Bureau.

The *monthly mean temperatures* published in Table I, for the regular stations of the Weather Bureau, are the simple means of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

The *regular diurnal period* in temperature is shown by the hourly means given in Table V for 29 stations selected out of 82 that maintain continuous thermograph records.

The *distribution* of the monthly mean temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart IV; the lines are drawn over the high irregular surface of the Rocky Mountain Plateau, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The *highest mean temperatures* were: Key West, 66.4; Jupiter, 62.3; Yuma, 57.8; Tampa, 57.2; Corpus Christi, 56.7. The lowest mean temperatures were, in the United States: St. Vincent, —20; and in Canada: Prince Albert, —11.0; Battleford, —9.3; Edmonton and Winnipeg, —4.5; Minnedosa, —4.0; Qu'Appelle, —2.9.

As compared with the normal for January, the mean temperatures for the current month were above the normal in all regions except the Atlantic Coast States where they were below.

The greatest excesses were: North Platte, 13.2; Dodge City, 12.8; Huron, 11.8; Concordia, 11.1; Denver, 10.7; Idaho Falls and Pierre, 10.5; Omaha, 10.1. The greatest deficits were; Edmonton, 5.7; Jupiter, 4.7; Vineyard Haven, 4.6; Key West, 4.0.

Considered by districts the mean temperatures for the current month show departures from the normal as given in Table I. The greatest positive departure was: Middle Slope, 9.8. The greatest negative departures: Florida Peninsula, 3.5; South Atlantic, 2.5.

The years of highest and lowest mean temperatures for January, are shown in Table I of the REVIEW for January, 1894. The mean temperature for the current month was the highest on record at: Concordia, 32.5; Topeka, 32.4; Wichita, 35.7;

Santa Fe, 33.9; Pueblo, 36.8; Cheyenne, 32.2; Idaho Falls, 26.0; Salt Lake City, 34.0; Los Angeles, 51.6; Fresno, 50.6; Point Reyes Light, 51.2; Sacramento, 50.2; Carson City, 40.4; Winnemucca, 35.6; Idaho Falls, 26.0; Baker City, 30.3; Roseburg, 44.4; Eureka, 50.0; Port Angeles, 39.0. It was not the lowest on record at any regular station of the Weather Bureau.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were: 87, Los Angeles (9th); 81, Yuma (21st); 80, San Antonio (21st), Jupiter (23d); 79, Key West (23d), Corpus Christi (21st), Phoenix (10th), and San Luis Obispo (10th). Lowest maxima: 34, Sault Ste. Marie (31st); 36, Alpena (12th), Marquette (31st); 38, St. Vincent (21st); 39, Northfield, (3d). The highest minima were: 55, Key West (5th); 42, Point Reyes Light (24th); 40, Jupiter (1st), San Francisco (6th); 39, San Diego (12th). The lowest minima were: -39, St. Vincent (4th); 31, Havre (3d); -27, Moorhead (4th); -25, Duluth (4th), Sault Ste. Marie (5th), Miles City (3d).

The *years of highest maximum and lowest minimum temperatures* are given in the last four columns of Table I of the current REVIEW. During the present month the maximum temperatures were the highest on record at: Neah Bay, 65; Baker City, 51; Idaho Falls, 39; Pierre, 60; Huron, 51; Sioux City, 63; Salt Lake City, 54; Carson City, 60; Los Angeles, 87; Yuma, 81. The minimum temperatures were the lowest on record at: Narragansett Pier, -11; Block Island, -4.

The *greatest daily range of temperature and the extreme monthly ranges* are given for each of the regular Weather Bureau stations in Table I, which also gives data from which may be computed the extreme monthly ranges for each station. The largest values of the greatest daily ranges were: Helena, 55; Rapid City, 54; Pueblo, 53; Havre, 52. The smallest values were: Key West, 12; Point Reyes Light, 15; Port Huron, Grand Haven, and Astoria, 17; Buffalo, Detroit, Hatteras, Galveston, and Fort Canby, 18; San Francisco, 19; Spokane, Nantucket, Philadelphia, Marquette, and Cleveland, 20. Among the extreme monthly ranges the largest values were: Havre, 84; St. Vincent, Rapid City, and North Platte, 77; Miles City, 76; Sioux City, 73; Huron, 72; Pierre, 71. The smallest values were: Point Reyes Light, 19; San Francisco, 23; Key West, 24; Fort Canby, 26; San Diego, 23; Astoria, 29.

*Accumulated monthly departure from normal temperatures.*—For the period January 1 to 31, the average temperature was above the normal throughout the whole country, except in New England, middle Atlantic, Florida Peninsula, and east Gulf. In regions where the temperature was deficient, the average deficit for the period was as follows: New England, 2.0; middle Atlantic, 1.6; south Atlantic, 2.5; Florida Peninsula, 3.5; east Gulf, 1.6.

In regions where the temperature was in excess, the average excess for the period was as follows: west Gulf, 2.5; Ohio Valley and Tennessee, 2.3; lower Lake, 0.5; upper Lake, 4.2; North Dakota, 4.7; upper Mississippi, 6.4; Missouri Valley, 4; northern Slope, 7; middle Slope, 9.3; southern Slope (Abilene), 4.9; southern Plateau, 4.6; middle Plateau, 8.1; northern Plateau, 9.4; north Pacific, 3.1; middle Pacific, 3.4; southern Pacific, 4.1.

The *limit of freezing weather* is shown on Chart VI by the isotherm of minimum 32°, and the limit of frost by the isotherm of minimum 40°.

#### MOISTURE.

The *quantity of moisture* in the atmosphere at any time may be expressed by the weight of the vapor coexisting with the air contained in a cubic foot of space, or by the tension or pressure of the vapor, or by the temperature of the dew-point. The mean dew-points for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, are given in Table I.

The *rate of evaporation* from a special surface of water on muslin at any moment determines the temperature of the wet-bulb thermometer, but a properly constructed evaporimeter may be made to give the *quantity* of water evaporated from a similar surface during any interval of time. Such an evaporimeter, therefore, would sum up or integrate the effect of those influences that determine the temperature as given by the wet bulb; from this quantity the *average humidity of the air* during any given interval of time may be deduced.

Measurements of evaporation within the thermometer shelters are difficult to make so as to be comparable at temperatures above and below freezing, and may be replaced by computations based on the wet-bulb temperatures. The absolute amount of evaporation from natural surfaces not protected from wind, rain, sunshine, and radiation, are being made at a few experimental stations and will be discussed in special contributions.

*Sensible temperatures.*—The sensation of temperature experienced by the human body and ordinarily attributed to the condition of the atmosphere depends not merely on the temperature of the air, but also on its dryness, on the velocity of the wind, and on the suddenness of atmospheric changes, all combined with the physiological condition of the observer. A complete expression for the relation between atmospheric conditions and nervous sensations has not yet been obtained.

#### PRECIPITATION.

[In inches.]

The *distribution of precipitation* for the current month, as determined by reports from about 2,500 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III. The total precipitation for the current month was heaviest on the immediate coasts of northern California, Oregon, and Washington. It was least in southern California, Nevada, and New Mexico. The largest values were: East Clallam, 26.9; Neahbay, 25.8; Tatoosh Island, 22.6; Pysht, 21.4.

The *current departures* from the normal precipitation are given in Table I, which shows that there was a deficit in most regions. The principal excesses were in the Pacific Coast States. Large excesses were: Neahbay, 10.5; Tatoosh Island, 9.3; Sacramento, 5.9; Carson City, 3.3; Palestine, 3.3; Shreveport and San Francisco, 3.2. The large deficits were: Knoxville, 4.3; Chattanooga, 4.2; Nashville, 4.0.

The *average departure* for each district is also given in Table I. By dividing these by the respective normals the following corresponding percentages are obtained (precipitation is in excess when the percentages of the normals exceed 100):

Above the normal: Florida Peninsula, 107; west Gulf, 113; North Dakota, 192; southern Slope, 153; southern Plateau, 144; middle Plateau, 164; north Pacific, 136; middle Pacific, 143; southern Pacific, 119.

Below the normal: New England, 41; middle Atlantic, 45; south Atlantic, 75; east Gulf, 67; Ohio Valley and Tennessee, 42; lower Lake, 71; upper Lake, 76; upper Mississippi, 55; Missouri Valley, 57; northern Slope, 85; middle Slope, 48; northern Plateau, 91.

The *years of greatest and least precipitation* for January are given in Table I of the REVIEW for January, 1890. The precipitation for the current month was the greatest on record at: Williston, 2.02; Tatoosh Island, 22.57; Neahbay, 25.85; Carson City, 5.26; Sacramento, 9.76; El Paso, 1.63. It was the least on record at: Eastport, 0.84; Northfield, 0.87; Albany, 0.98; Block Island, 2.02; Narragansett Pier, 1.59; Harrisburg, 1.00; Port Huron, 0.69; Green Bay, 0.98; Louisville, 0.82; Lexington, 1.25; Knoxville, 1.49; Parkersburg, 1.42.

The *total accumulated monthly departures* from normal precipitation since the beginning of the current year, furnishes